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Biofuels Annual

Trade Protection Worsens Biofuels Shortfall

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Report Highlights:
Colombian biofuels production cannot fulfill policy expectations as a result of production deficiencies and insular policies that restrict trade. Trade protection has exacerbated supply conditions leading to significant gaps in fulfilling both ethanol and biodiesel blend mandates.

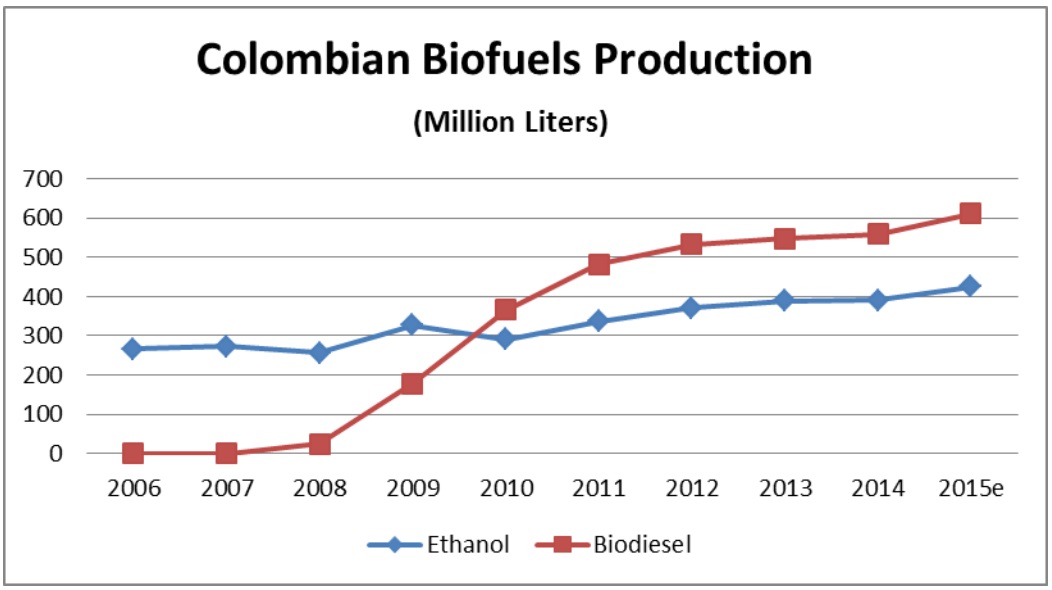
Post:
Bogota

Executive Summary:
Colombian sugar cane-based ethanol production capacity remained at 1.25 million liters per day in 2014, significantly below the necessary production to meet the current 8% ethanol blend mandate in gasoline, or E8. Even though there are no official figures on the actual volume of ethanol blend demand, ethanol production and gasoline consumption data suggest that the average ethanol blend in Colombia barely reaches 6%. Trade protectionist policies favoring subsidized prices for domestic ethanol production have only exacerbated Colombia's inability to meet the E8 mandate. However, the additional production of a new ethanol facility scheduled to come online at the end of 2015 could boost domestic capacity to meet E8.

In 2014, Colombian palm oil-based biodiesel production capacity remained at 620 million liters per year, slightly below the necessary production to meet the current biodiesel blend in diesel fuel mandates of 8% (or B8) and 10% (or B10), depending on the region of Colombia. Even though there are no official figures on the actual volume of biodiesel blend demand, biodiesel production and diesel consumption data suggest that the average biodiesel blend in Colombia reaches about 7%. The expansion of palm area planted and palm oil production in Colombia shows the potential for an increase in palm oil-based biodiesel production; however, GOC policies supporting the sector remain unclear, therefore production capabilities remain unchanged with no indications that new facilities will come online in the near term. The National Federation of Oil Palm Growers of Colombia (FEDEPALMA) has been critical of the GOC for a lack of commitment on subsidized biodiesel prices and no pledges to increase the biodiesel blend mandate, which could boost demand and investment in biodiesel production facilities. Post sources indicate that biodiesel import trade barriers exist through complicated product entry requirements and tedious licensing procedures for storage tanks at ports-of-entry.

Policy and Programs:
Colombia's biofuels policy originates from GOC Ministry of Mining and Energy (MME) Resolution 18-0867 (June 17, 2003), which established the regulatory framework for determining blending levels of ethanol in gasoline and biodiesel in diesel. The biofuels policy and corresponding blend mandates were primarily developed to support additional revenue streams for the cane sugar and palm oil industries. Fleet efficiency goals were temporarily established for new vehicles in 2012, but that policy was eliminated shortly after its announcement due to domestic auto industry complaints. Biofuels production facilities receive a special tax designation as an industrial free trade zone and therefore pay zero taxes on revenues. Biofuel sales are also excluded from paying a 16% value-added-tax. Ethanol sales are exempt from regional departmental taxes; however, biodiesel sales are levied a departmental tax of US$0.15 per gallon.

The illustration below shows the growth in the industry from 2006 to the present:



Source: Colombian National Biofuels Federation (FEDEBIOCOMBUSTIBLES)

The current mandate for biodiesel blending in diesel fuel is either B8 or B10 depending on the region of the country. For ethanol, the blend mandate was previously either E8 or E10 depending on the region of Colombia. The MME increased the gasoline blend mandate to E10, on October 31, 2013 (MME Resolution 9-0932) to stimulate domestic production and/or reduce inventories, but resulted in record levels of U.S. ethanol exports to Colombia. Three months later the GOC reduced the mandate back to E8 on January 31, 2014 (MME Resolution 9-0153). The reduction in the blend mandate was followed by MME resolution 9-0454 in April 2014 that limited trade access for imports if the blend mandate could be satisfied with domestic production. Trade abruptly fell to zero as the MME delayed, for about one year, publishing a methodology to determine the necessary import volumes.

Post calculations indicate that Colombian domestic ethanol production has never been able to meet the E8 blend mandate without some imports (see table below). The lack of domestic capacity to supply the ethanol blend mandate was evident on April 30, 2015, when the GOC promulgated MME Resolution 40521 removing the blend mandate entirely due to a shortage of domestic ethanol production. Throughout the month of May and part of June, Colombian gasoline was blended with little or no ethanol. According to MME, removing the blend mandate was necessary due to excessive rains and harvesting challenges in the primary sugar producing region of Colombia, limiting feedstock availability for ethanol.

The regulatory measure removing the blend mandate showcases the inconsistent and insular nature of GOC biofuel policies that cater to domestic industry concerns with competition, as opposed to meeting blend mandate goals through domestic production and, if necessary, imports. This insular focused approach applies to biodiesel as well, even though GOC trade protectionist measures are not as overt as with ethanol. Post calculations also indicate that Colombia cannot fulfill the biodiesel blend mandate with only domestic production (see table below).

In addition to blend mandates, the MME announces monthly prices that must be paid to domestic producers of biofuels. The MME applies a price formula for gasoline and diesel fuel which includes a

mandated price that must be paid by blenders to domestic biofuels producers. The most recent MME mandated price for a liter of ethanol was approximately $0.63. For biodiesel, the most recent MME mandated price per liter was about $0.92. Imported biofuels, however, are not subject to MME mandated prices creating opportunities for competition. Imported biofuels from the United States have trade preferences under the U.S.-Colombia Trade Promotion Agreement. Current import duties for both U.S. ethanol and biodiesel are 3% and will fall to zero in 2016.

Ethanol

Production:
Post forecasts ethanol production to reach 425 million liters in 2015, increasing further to 500 million liters in 2016 as a new ethanol facility begins operation. Colombian ethanol production is derived entirely from cane sugar. Cane sugar production sufficiently exceeds local demand creating a production surplus for ethanol and/or sugar exports. The cane sugar feedstock neither competes with the food supply nor takes land from alternative food crops. Ethanol production has displaced 48 percent of sugar of exports with little impact on domestic sugar prices.

All of Colombia's ethanol production is supplied by five ethanol distilleries near the city of Cali, in south central Colombia. The ethanol distilleries are clustered within larger industrial sugar production and milling facilities. A new ethanol plant at the Riopaila-Castilla sugar mill should be operational towards the end of the 2015 calendar year, adding about 120 million liters per year supporting an increase in the average domestic production to 1.65 million liters per day.

Currently, Colombian ethanol capacity is unable to fulfill the E8 blend mandate. Post estimates of ethanol demand are based on total Colombian gasoline consumption, indicating a gap in annual production close to 50 million liters to meet E8. The table below articulates the ethanol shortfall at both E8 and E10:

Colombia Ethanol Use Profile (Million liters)					
	2010	**2011**	**2012**	**2013**	**2014**
Production - Ethanol	291	337	370	388	406
Imports - Fuel Ethanol	6	7	8	21	17
Total Supply	297	344	378	409	423
Consumption - Gasoline	4,569	4,749	4,890	5,095	5,376
Est. Ethanol required – E8	*365*	*380*	*391*	*408*	*430*
Est. Ethanol required - E10	*457*	*475*	*489*	*509*	*538*

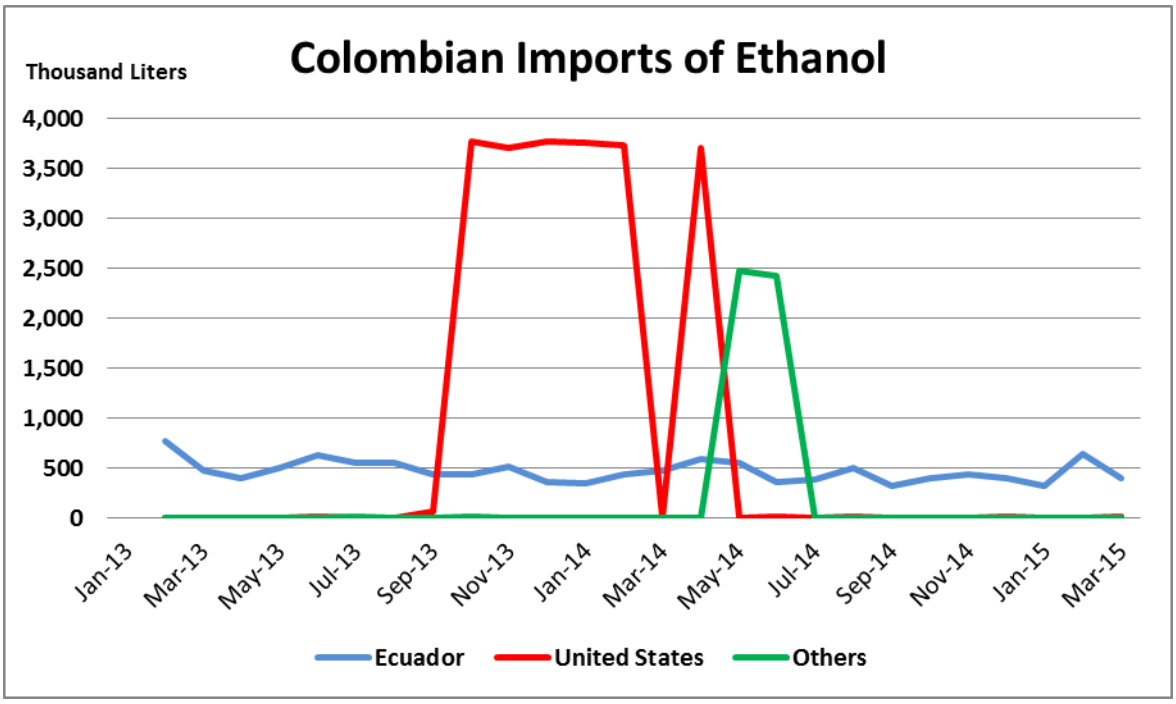
Source: MME; The National Biofuels Federation of Colombia (FEDEBIOCOMBUSTIBLES)

Consumption:
Following incremental increases in gasoline consumption, Post estimates that 2015 ethanol consumption will reach 430 million liters, increasing to 510 million liters in 2016. As a result of trade protectionist policies, Colombian ethanol consumption is almost entirely dependent on domestic ethanol production to fulfill the E8 blend mandate. There is no official data on the blend demand volume; however, Post calculations based on annual ethanol production show that current ethanol facilities only produced at

full capacity for a 325 days in 2014, supporting the claim that Colombian ethanol production cannot, and did not, meet the E8 blend. However, the new ethanol plant that is expected to come online at the end of 2015 will support national production likely meeting the E8 blend mandate in 2016.

Trade:

Ethanol biofuel imports represent about 1% of Colombian ethanol biofuel consumption. The buying enthusiasm of U.S. ethanol was fleeting with export values reaching $9.2 million from January through March 2014. The MME resolution 9-0454 on April 29, 2014, ended that trend with U.S. ethanol imports plummeting to zero by September 2014. Regulatory restrictions notwithstanding, smaller volumes of ethanol imports, primarily from Ecuador, continued until early 2015 in violation of the April 2014 resolution (see illustration below).



Source: Colombian National Department of Statistics (DANE)

As a result of the ethanol production and imports shortfall, the MME issued a one-time approval in May/June 2015 (MME Resolution 4-0583 of May 22, 2015) allowing 1,000,000 liters of ethanol imports. Since then, no additional import permits for ethanol have been approved. The expectation is that U.S. ethanol exports to Colombia will continue to be competitive as corn feedstock prices remain low.

Stocks:

Colombia does not have programs to encourage storage or long-term stocks of biofuels. However, gasoline and diesel fuel regulations require stocks to adequately supply the market at 10 days of total fuel demand.

Biodiesel

Production:
In 2015, the total Colombian production capacity of biodiesel is estimated to reach 571,000 metric tons (MT). Post estimates production biodiesel production to remain stagnant for 2016. There are nine biodiesel plants using palm oil as the primary feedstock. Eight of these plants are owned by palm oil producers, while one plant is part of Colombia's public owned petroleum company, ECOPETROL. These eight plants are fully operational and produce about 95 percent of the total Colombian biodiesel production. A new biodiesel facility was projected to come online in 2015; however, indications are that the new facility may not operate until sometime in 2016. The table below articulates the current biodiesel shortfall at the B10 blend mandate.

Colombia Biodiesel Use Profile (Million liters)					
	2010	**2011**	**2012**	**2013**	**2014**
Production - Biodiesel	396	522	578	594	606
Imports - Biodiesel	0	0	0	0	0
Total Supply	396	522	578	594	606
Production - Diesel	6,591	*7,028*	*7,511*	*7,812*	*8,210*
Est. Biodiesel required – B8	*527*	*562*	*601*	*625*	*657*
Est. Biodiesel required – B10	*659*	*703*	*751*	*781*	*821*

Source: MME; FEDEBIOCOMBUSTIBLES

Consumption:
Colombia biodiesel consumption is entirely dependent on local production to meet the GOC blend mandate. According to FEDEBIOCOMBUSTIBLES, blend levels are B8 for blending facilities near Bogota and the Department of Guaviare and B10 for the Caribbean coast, central and Pacific coast of Colombia. Biodiesel consumption is currently B10 in the most populous regions of Colombia, covering 85 percent of the total population. Some remote areas along the eastern plains and border regions only blend between B2 and B8. Biodiesel consumption in 2014 reached 558,000 MT. Post forecast is that biodiesel consumption will increase marginally to 560,000 MT in 2015 and remain stagnant for 2016 as the new facility may yet be ramping up operations.

Trade:
Colombia neither imports nor exports palm-based biodiesel. The biofuels industry aspires to export of biodiesel as palm area continues to expand, improving the potential for more biodiesel production.

Stocks:
Colombia does not have programs to encourage storage or long-term stocks of biofuels. However, gasoline and diesel fuel regulations require stocks to adequately supply the market at 10 days of total fuel demand.

Advanced Biofuels
There is no production of advanced biofuels in Colombia.

Biomass for Heat and Power

The Colombian sugar sector capacity for electric power generation is at 215 megawatts (MW), of which 147 MW is for supporting self-sufficient plant operations with the remaining amount sold to utilities for public consumption. The palm oil sector has 2 power plants that generate 3 MW to cover operations. Other palm oil producers generate energy from the biogas to support self-sufficiency. The palm and ethanol industries claim to be capable in generating more power resources to sell to local utilities; however, without any further GOC subsidies there is little incentive.

Notes on Statistical Data

There is no comprehensive public information on fuel consumption and production in Colombia. The source for production data for ethanol is The Colombian National Association of Sugar Producers and FEDEPALMA for biodiesel. DANE is the primary source for trade data. Figures for consumption correspond to production as there is limited data on stocks

Tables

Ethanol Used as Fuel and Other Industrial Chemicals (Liters - Millions)										
Calendar Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Beginning Stocks	4	5	5	8	7	9	5	0	0	0
Fuel Begin Stocks	4	5	5	8	7	9	5	46	44	49
Production	272	256	327	291	337	370	388	406	425	500
Fuel Production	272	256	327	291	337	370	388	406	425	500
Imports	48	30	32	70	55	89	138	98	90	80
Fuel Imports	3	4	4	6	7	8	21	10	10	10
Exports										
Fuel Exports	0	0	0	0	0	0	0	0	0	0
Consumption										
Fuel Consumption	269	256	324	293	335	366	368	418	430	510
Ending Stocks										
Fuel Ending Stocks	10	9	12	12	16	21	46	44	49	49
Total BalanceCheck	324	291	364	369	399	468	531	504	515	580
Fuel BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity										
Number of Refineries	5	5	5	5	5	6	6	6	6	7
Nameplate Capacity	378	378	378	378	378	456	456	456	550	550
Capacity Use (%)	72%	68%	87%	77%	89%	81%	85%	89%	77%	91%
Co-product Production (1,000 MT)										
Co-product A										
Co-product B										
Feedstock Use (1,000 MT)										
Sugarcane	3,587	3,667	3,416	4,350	4,405	4,480	4,450	4,450	4,600	5,100
Cassava					8	8	8	0	0	0
Feedstock C										
Feedstock D										
Market Penetration (Liters - Millions)										
Fuel Ethanol	269	256	324	293	335	366	368	418	430	510
Gasoline	4,620	4,463	4,428	4,569	4,749	4,890	5,095	5,480	5,950	6,500
Blend Rate (%)	5.8%	5.7%	7.3%	6.4%	7.1%	7.5%	7.2%	7.6%	7.2%	7.8%

Biodiesel (Metric Tons)										
Calendar Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Beginning Stocks	0	0	1,013	5,184	8,286	10,973	3,093	1,612	2,845	4,845
Production			177,271	365,802	481,587	532,620	547,127	558,070	560,000	560,000
Imports										
Exports										
Consumption			173,100	362,700	478,900	540,500	548,608	556,837	558,000	560,000
Ending Stocks			5,184	8,286	10,973	3,093	1,612	2,845	4,845	4,845
BalanceCheck	0	0	0	0	0	0	1	0	0	0
Production Capacity										
Number of Biorefineries			2	6	6	6	6	6	6	6
Nameplate Capacity			50,000	543,500	570,675	570,675	570,675	570,675	570,675	570,675
Capacity Use (%)			354.5%	67.3%	84.4%	93.3%	95.9%	97.8%	98.1%	98.1%
Feedstock Use (Thousands MT)										
Palm Oil			163	337	443	490	505	505	510	510
Feedstock B										
Feedstock C										
Feedstock D										
Market Penetration (Million Liters)										
Biodiesel, on-road use			193	398	523	579	595	607	609	609
Diesel, on-road use			6,191	6,591	7,028	7,511	7,812	8,210	8,601	8,986
Blend Rate (%)			3.1%	6.0%	7.4%	7.7%	7.6%	7.4%	7.1%	6.8%
Diesel, total use										